REMARKS

Claims 1-17 remain pending in the application, in which claims 1 and 8 are currently amended.

Rejections under 35 U.S.C. §103

Claims 1 and 8 are rejected under 35 U.S.C. §103(a) as being unpatentable over US Patent No. 3,536,418 to Breaux (hereinafter referred to as "Breaux") in view of US Patent No. 6,375,413 to Stones (hereinafter referred to as "Stones").

Independent claim 1, as amended, is directed to a vacuum pumping system having a vacuum pumping arrangement comprising: a drive shaft; a motor for driving the drive shaft; a molecular pumping mechanism comprising turbomolecular pumping means; a backing pumping mechanism, wherein the drive shaft is for driving the molecular pumping mechanism and the backing pumping mechanism; and an evacuation means for evacuating at least the turbomolecular pumping means prior to start up of the molecular pumping mechanism, wherein the evacuation means is decoupled from the molecular pumping mechanism during its normal operation. The added, underlined claim limitations are supported at least by the first paragraph on page 12 of the specification. For example with reference to FIG. 4, the paragraph provides "[d]uring normal operation, valves 82 and 78 are opened whilst valve 80 is closed."

Breaux fails to teach or suggest "the evacuation means is decoupled from the molecular pumping mechanism during its normal operation." As shown in FIG. 1 of Breaux, roughing pump 33 (which the Examiner equates to the claimed evacuation means) is connected down stream of turbomolecular pump 10, and regulates the gas

output of the same. Thus, roughing pump 33 must remain "coupled" to turbomolecular pump 10 during its normal operation. Otherwise, the gas outlet of turbomolecular pump 10 would be blocked, and therefore causing it to fail during normal operation.

The claimed invention has a benefit of cost savings. For example, one embodiment of the claimed invention utilizes a load-lock pump 74 to evacuate the pumping arrangement 10 in the start up stage, while returning the load-lock pump 74 back to the load-lock 76 for its own separate purpose when the pumping arrangement 10 is in normal operation. See, FIG. 4. In the embodiment, the load-lock pump 74 is shared by both the pumping arrangement 10 and the load-lock chamber 76. In Breaux, the roughing pump 37 is, however, dedicated to the turbomolecular pump 10 only, without being shared with any other devices. Thus, the claimed invention is advantageous over Breaux, because of better allocation of manufacturing resources.

Stones does not teach or suggest the claimed evacuation means, either. Stones is cited for its disclosure of a backing pump, but not for that of evacuation means.

A combination of Breaux and Stones would still fail to teach or suggest the claimed evacuation means that is decoupled from the molecular pumping mechanism during its normal operation. As such, claim 1 is patentable over Breaux and Stones under section 103.

Independent claim 8, as amended, is directed to a method of operating a vacuum pumping arrangement having a drive shaft; a motor for driving the drive shaft; a molecular pumping mechanism having turbomolecular pumping means; and a backing pumping mechanism, wherein the drive shaft is for driving the molecular pumping mechanism and the backing pumping mechanism, the method comprising the step of

operating an evacuation means connected to the arrangement to evacuate the turbomolecular pumping means to a predetermined pressure; operating the motor to start rotation of the drive shaft; and decoupling the evacuation means from the molecular pumping mechanism during its normal operation.

For the same reason as discussed above, claim 8 is also patentable over Breaux and Stones under section 103.

Claims 1-3, 5-7 and 15 are rejected under 35 U.S.C. §103(a) as being unpatentable over US Patent No. 6,446,651 to Abbel (hereinafter referred to as "Abbel") in view of Stones.

In rejecting claim 1, Examiner equates pump 4 of Abbel to the evacuation means of the claimed invention. Applicant respectfully disagrees.

Claim 1, as amended, includes evacuation means that is "decoupled from the molecular pumping mechanism during its normal operation." This is a feature that cannot be possessed by Abbel. If pump 4 of Abbel were to be decoupled from high vacuum pump 3 during its normal operation, valve 5 would have had to be closed, which would cut off the exhaust path of the high vacuum pump 3 and cause it to fail.

Again, Stones does not teach or suggest the claimed evacuation means, because it is cited for its disclosure of a backing pump, but not for that of evacuation means.

As such, claim 1 is patentable over Abbel in view of Stones under section 103. Accordingly, claims 2-3, 5-7 and 15 that depend from independent claim 1 and include all the limitations recited therein are also patentable over Abbel and Stones under section 103.

Claim 1 is rejected under 35 U.S.C. §103(a) as being unpatentable over US Patent No. 6,161,576 to Maher et al. (hereinafter referred to as "Maher") in view of Stones.

In rejecting claim 1, Examiner equates the roughing pump of Maher to the evacuation means of the claimed invention. However, Applicant respectfully disagrees. The roughing pump cannot be decoupled from the turbo pump of Maher during normal operation. Otherwise, the turbo pump would simply fail.

Claims 4 and 16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Abbel, in view of Stones and further in view of US Patent No. 4,577,465 to Olsen (hereinafter referred to as "Olsen").

As discussed above, independent claim 1 as amended is patentable over the cited prior art references under section 103. Accordingly, claims 4 and 16 that depend from claim 1 and include all the limitations recited therein are also patentable over Abbel, Stones and Olsen under section 103.

Claims 8, 9, 11, 13, 14 and 17 are rejected under 35 U.S.C. §103(a) as being unpatentable over Maher in view of Stones.

Independent claim 8, as amended, is directed to a method that decouples the evacuation means from the molecular pumping mechanism during its normal operation. As discussed above, neither Maher nor Stones does teach or suggest such feature. Thus, claim 8 is patentable over Maher and Stones under section 103.

Accordingly, claims 9, 11, 13, 14 and 17 that depend from independent claim 8 and include all the limitations recited therein are also patentable over Maher and Stones under section 103.

Claim 10 is rejected under 35 U.S.C. §103(a) as being unpatentable over Maher in view of Stones, and further in view of US Patent No. 6,474,949 to Arai et al. (hereinafter referred to as "Arai").

As discussed above, independent claim 8 as amended is patentable over the cited prior art references under section 103. Accordingly, claim 10 that depends on claim 1 and includes all the limitations recited therein is also patentable over Maher, Stones and Arai under section 103.

Claim 12 is rejected under 35 U.S.C. §103(a) as being unpatentable over Maher in view of Stones, and further in view of Olsen.

As discussed above, independent claim 8 as amended is patentable over the cited prior art references under section 103. Accordingly, claim 12 that depends on claim 8 and includes all the limitations recited therein is also patentable over Maher, Stones and Olsen under section 103.

CONCLUSION

Applicant has made an earnest attempt to place this application in an allowable form. In view of the foregoing remarks, it is respectfully submitted that the pending claims are drawn to a novel subject matter, patentably distinguishable over the prior art of record. Examiner is therefore, respectfully requested to reconsider and withdraw the outstanding rejections.

Applicant does not believe that any additional fee is due, but as a precaution, the Commissioner is hereby authorized to charge any additional fee to deposit account number 50-4244.

Should Examiner deem that any further clarification is desirable, Examiner is invited to telephone the undersigned at the below listed telephone number.

Respectfully submitted,

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